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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,763	03/24/2004	Kevin J. Lee	42P6148D	5901
8791 7590 05/30/2007 BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			EXAMINER ZHENG, LOIS L	
			ART UNIT 1742	PAPER NUMBER
			MAIL DATE 05/30/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/808,763

Applicant(s)

LEE, KEVIN J.

Examiner

Lois Zheng

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1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claim 1 is amended in view of applicant's amendment filed 15 March 2007.

Therefore, claims 1-7 are currently under examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gealer et al. US 4,765,865(Gealer) in view of Zechman US 3,774,079(Zechman).

Gealer teaches an electroetching apparatus selectively removing a conductive layer from a wafer substrate via a mask(abstract). The electroetching apparatus of Gealer comprises a potentiostat(Fig. 2 #22) having three terminals each connected to a counter electrode(Fig. 2 #10), a working electrode couple to the substrate(Fig. 2 #9) and a reference electrode(Fig. 2 #23) respectively, Gealer further teaches a reaction vessel storing the electrolyte and housing the wafer substrate, the counter electrode and the reference electrode that are immersed in the electrolyte(Fig. 2 # 13).

Regarding claim 1, Gealer teaches all the components of the claimed apparatus except the amended feature of an independent clip electrically coupled to a portion of the conductive layer on the substrate.

Zechman teaches electrolytically fabricating semiconductor circuits comprising positioning the semiconductor wafer and providing electrical current to the wafer via an annular clip(Fig. 1 #5).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the annular contact clip as taught by Zechman into the electroetching apparatus of Gealer in order to provide a large contact surface area to ensure adequate current flow as taught by Zechman(col. 3 lines 56-63).

In addition, the claimed substrate having sub-micron interconnect features does not lend patentability to the instantly claimed apparatus since the substrate is directed to a subject that is worked on by the claimed apparatus. It is well settled that "expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim". Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." In re Young, 75 F.2d 996, 25 USPQ 69 (CCPA 1935) (as restated in In re Otto, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). See MPEP 2115 [R-2].

Furthermore, the claim recitation of how the potential difference between the substrate and the reference electrode is maintained and when the selective removal of conductive layer is ended does not lend patentability to the instant apparatus claims since they are directed to how the claimed apparatus is being operated. It is well settled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from

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a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP 2114. Since the recited process limitations do not structurally differentiate the claimed apparatus from the apparatus of Gealer in view of Zechman, the recited process limitations do not render the instant claim patentable.

The examiner also maintains a position that the apparatus of Gealer in view of Zechman is capable of performing in the claimed fashion.

Regarding claim 2, the apparatus of Gealer in view of Zechman is capable of varying a current between the substrate and the counter electrode to maintain the potential different at a fixed value as claimed(col. 5 lines 40-43).

Regarding claims 3-7, the claimed conductive layer, barrier layer and the sub-micron interconnect features are directed to the wafer substrate which is worked on by the claimed apparatus. Therefore, these claim limitations does not lend patentability to the instant apparatus claims for the same reasons as stated in the rejection of claim 1 above. See MPEP 2115 [R-2].

4. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gealer et al. US 4,765,865(Gealer) in view of Shaw US 3,560,357(Shaw).

The teachings of Gealer are discussed in paragraph 3 above. However, Gealer does not explicitly teach the claimed amended feature of an independent clip electrically coupled to a portion of the conductive layer on the substrate.

Shaw teaches an apparatus for selective electroetching of a substrate(title). Shaw further teaches using a spring clip for positioning the substrate in an electrolytic bath and to provide electrical current to the substrate(Fig. 2 #19, col. 3 lines 55-68).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the spring clip as taught by Shaw into the electroetching apparatus of Gealer in order to hold and position the substrate in the electrolytic bath at the same time providing electrical current to the substrate as shown in Shaw.

The remaining claim limitations regarding claims 1-7 are rejected for the same reasons as stated in paragraph 3 above.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gealer et al. US 4,765,865(Gealer) in view of Van Dijk US 3,616,345(Van Dijk).

The teachings of Gealer are discussed in paragraph 3 above. However, Gealer does not explicitly teach the claimed amended feature of an independent clip electrically coupled to a portion of the conductive layer on the substrate.

Van Dijk teaches an apparatus for selective electroetching of a substrate(title). Van Dijk further teaches using a clip for positioning the substrate in an electrolytic bath and to provide electrical current to the substrate(Fig. 4 #30-31, col. 4 lines 24-71).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the spring clip as taught by Van Dijk into the electroetching apparatus of Gealer in order to hold and position the substrate in the electrolytic bath at the same time providing electrical current to the substrate as shown in Van Dijk.

The remaining claim limitations regarding claims 1-7 are rejected for the same reasons as stated in paragraph 3 above.

6. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri et al. US 5,173,149(Nojiri) in view of Zechman US 3,774,079(Zechman).

Nojiri teaches an electroetching apparatus for selectively removing a conductive layer from a wafer substrate(abstract). The electroetching apparatus of Nojiri comprises a potentiostat(Fig. 5 #21) having three terminals each connected to a counter electrode(Fig. 5 #4), a working electrode couple to the substrate(Fig. 5 #3) and a reference electrode(Fig. 5 #22) respectively, Nojiri further teaches a reaction vessel storing the electrolyte and housing the wafer substrate, the counter electrode and the reference electrode that are immersed in the electrolyte(Fig. 5 #1-2).

Regarding claim 1, Nojiri teaches all the components of the claimed apparatus except the amended feature of an independent clip electrically coupled to a portion of the conductive layer on the substrate.

Zechman teaches electrolytically fabricating semiconductor circuits comprising positioning the semiconductor wafer and providing electrical current to the wafer via an annular clip(Fig. 1 #5).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the annular contact clip as taught by Zechman into the electroetching apparatus of Nojiri in order to provide a large contact surface area to ensure adequate current flow as taught by Zechman(col. 3 lines 56-63).

In addition, the claimed substrate having sub-micron interconnect features does not lend patentability to the instantly claimed apparatus since the substrate is directed to a subject that is worked on by the claimed apparatus. It is well settled that "expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim". *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 75 F.2d 996, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)). See MPEP 2115 [R-2].

Furthermore, the claim recitation of how the potential difference between the substrate and the reference electrode is maintained and when the selective removal of conductive layer is ended does not lend patentability to the instant apparatus claims since they are directed to how the claimed apparatus is being operated. It is well settled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See MPEP 2114. Since the recited process limitations do not structurally differentiate the claimed apparatus from the apparatus of Nojiri in view of Zechman, the recited process limitations do not render the instant claim patentable.

The examiner also maintains a position that the apparatus of Nojiri in view of Zechman is capable of performing in the claimed fashion.

Regarding claim 2, the apparatus of Nojiri in view of Zechman is capable of varying a current between the substrate and the counter electrode to maintain the potential different at a fixed value as claimed(col. 3 lines 11-28).

Regarding claims 3-7, the claimed conductive layer, barrier layer and the sub-micron interconnect features are directed to the wafer substrate which is worked on by the claimed apparatus. Therefore, these claim limitations does not lend patentability to the instant apparatus claims for the same reasons as stated in the rejection of claim 1 above. See MPEP 2115 [R-2].

7. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri et al. US 5,173,149(Nojiri) in view of Shaw US 3,560,357(Shaw).

The teachings of Nojiri are discussed in paragraph 6 above. However, Nojiri does not explicitly teach the claimed amended feature of an independent clip electrically coupled to a portion of the conductive layer on the substrate.

Shaw teaches an apparatus for selective electroetching of a substrate(title). Shaw further teaches using a spring clip for positioning the substrate in an electrolytic bath and to provide electrical current to the substrate(Fig. 2 #19, col. 3 lines 55-68).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the spring clip as taught by Shaw into the electroetching apparatus of Nojiri in order to hold and position the substrate in the electrolytic bath at the same time providing electrical current to the substrate as shown in Shaw.

The remaining claim limitations regarding claims 1-7 are rejected for the same reasons as stated in paragraph 6 above.

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8. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri et al. US 5,173,149(Nojiri) in view of Van Dijk US 3,616,345(Van Dijk).

The teachings of Nojiri are discussed in paragraph 6 above. However, Nojiri does not explicitly teach the claimed amended feature of an independent clip electrically coupled to a portion of the conductive layer on the substrate.

Van Dijk teaches an apparatus for selective electroetching of a substrate(title). Van Dijk further teaches using a clip for positioning the substrate in an electrolytic bath and to provide electrical current to the substrate(Fig. 4 #30-31, col. 4 lines 24-71).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the spring clip as taught by Van Dijk into the electroetching apparatus of Nojiri in order to hold and position the substrate in the electrolytic bath at the same time providing electrical current to the substrate as shown in Van Dijk.

The remaining claim limitations regarding claims 1-7 are rejected for the same reasons as stated in paragraph 6 above.

Drawings

9. Amendment to Fig. 2 filed on 15 March 2007 is entered.

Response to Arguments

10. Applicant's arguments with respect to claims 1-7 filed 15 March 2007 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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